

Amendment and Response

Applicant: John M. Wade

Serial No.: 10/789,189

Filed: February 27, 2004

Docket No.: 200313255-1

Title: FLUID EJECTION DEVICE WITH FEEDBACK CIRCUIT

REMARKS

The following Remarks are made in response to the Non-Final Office Action mailed May 15, 2006, in which claims 9, 10, 18, 20, 21, and 25-28 were withdrawn from consideration as being directed to a non-elected species, claims 1, 2, 5-8, 11, 12, 15-17, 19, and 22-24 were rejected, and claims 3, 4, 13, and 14 were objected to.

With this Amendment, claims 27 and 28 have been cancelled without prejudice, claims 1, 2, 3, 11, 12, 13, 19, and 24 have been amended, and allowable claims 3 and 13 have been rewritten in independent form.

Claims 1-26, therefore, remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 102 and 35 U.S.C. § 103

Claims 1, 2, 6, 8, 11, 12, 17, 19, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Tamura US Patent Application No. 2001/0033305.

Claims 19 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Badyal et al. US Patent No. 5,083,137.

Claims 5, 7, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura US Patent Application No. 2001/0033305 in view of Hawkins et al. US Patent No. 4,947,192.

Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Badyal et al. US Patent No. 5,083,137 in view of Holstum US Patent No. 6,217,147.

With this Amendment, independent claim 1 has been amended to clarify that the fluid ejection device includes "a plurality of fluid ejecting elements, each fluid ejecting element coupled between a shared supply path at a supply voltage and a shared return path at a reference voltage and to a separate control line, and controllable to conduct electrical current from the shared supply path to the shared return path in response to a fire signal received via the separate control line," and clarify that the feedback circuit comprises "a plurality of supply sense switches each corresponding to a different one of the fluid ejecting elements and coupled between a supply sense line and the shared supply path; and a plurality reference sense switches each corresponding to a different one of the fluid ejecting elements and coupled between a reference sense line and the shared return path, wherein each supply sense

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switch and reference sense switch respectively ties the supply sense line to the shared supply path and the reference sense line to the shared return path in response to the fire signal received via the separate control line."

With this Amendment, independent claim 11 has been amended to clarify that the fluid ejection device includes "a group of the resistors, each resistor coupled between a supply voltage and a reference voltage and to a separate control line, and configured to conduct electrical current from a shared supply path to a shared return path in response to a fire signal received via the separate control line," and clarify that the feedback circuit comprises "a plurality of supply sense switches each corresponding to a different one of the resistors and coupled between a supply sense line and the shared supply path; and a plurality of reference sense switches each corresponding to a different one of the resistors and coupled between a reference sense line and the shared return path, wherein each supply sense switch and reference sense switch respectively ties the supply sense line to the shared supply path and the reference sense line to the shared return path in response to the fire signal received via the separate control line."

With this Amendment, independent claim 19 has been amended to clarify that the method includes "conducting an electrical current through up to all resistors of the group in response to a fire signal, each conducting resistor having a corresponding voltage and receiving the fire signal via a separate control line," and includes "determining a feedback voltage substantially equal to an average of the corresponding voltages of the conducting resistors," wherein determining the feedback voltage includes "coupling a plurality of supply sense switches each corresponding to a different one of the resistors between a supply sense line and the supply voltage, and coupling a plurality of reference sense switches each corresponding to a different one of the resistors between a reference sense line and the reference voltage, each supply sense switch and reference sense switch respectively tying the supply sense line to the supply voltage and the reference sense line to the reference voltage in response to receiving the fire signal via the separate control line."

With this Amendment, independent claim 24 has been amended to clarify that the fluid ejection device includes "means for determining a feedback voltage that is substantially equal to an average of the corresponding fluid ejecting voltages of the conducting fluid ejecting elements," wherein means for determining the feedback voltage includes "a plurality

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of supply sense switches each corresponding to a different one of the fluid ejecting elements and coupled between a supply sense line and the supply voltage, and a plurality reference sense switches each corresponding to a different one of the fluid ejecting elements and coupled between a reference sense line and the reference voltage, wherein each supply sense switch and reference sense switch respectively ties the supply sense line to the supply voltage and the reference sense line to the reference voltage in response to a fire signal received via a separate control line for each fluid ejecting element."

With respect to the Tamura, Badyal, Hawkins, and Holstun references, Applicant submits that these references, individually or in combination, do not teach or suggest a fluid ejection device as claimed in independent claim 1, do not teach or suggest a fluid ejection device as claimed in independent claim 11, do not teach or suggest a method of operating a fluid ejection device as claimed in independent claim 19, and do not teach or suggest a fluid ejection device as claimed in independent claim 24.

In view of the above, Applicant submits that independent claims 1, 11, 19, and 24 are each patentably distinct from the Tamura, Badyal, Hawkins, and Holstun references and, therefore, are each in a condition for allowance. Furthermore, as dependent claims 2 and 5-10 further define patentably distinct claim 1, dependent claims 12 and 15-18 further define patentably distinct claim 11, dependent claims 20-23 further define patentably distinct claim 19, and dependent claims 25-26 further define patentably distinct claim 24, Applicant submits that these dependent claims are also in a condition for allowance. Applicant, therefore, respectfully requests that the rejections of claims 1, 2, 6, 8, 11, 12, 17, 19, and 24 and claims 19 and 24 under 35 U.S.C. 102(b), and claims 5, 7, 15, and 16 and claims 22 and 23 under 35 U.S.C. 103(a) be reconsidered and withdrawn, and that claims 1-26 be allowed.

Allowable Subject Matter

Claims 3, 4, 13, and 14 are objected to as being dependent upon a rejected base claim and are indicated as being allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

With this Amendment, Applicant has rewritten allowable claim 3 in independent form to include all of the limitations of the base claim (claim 1) and any intervening claims (claim 2). As rewritten claim 3 is now believed to be in allowable form, Applicant respectfully

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submits that dependent claim 4 is allowable in dependent form. Applicant, therefore, respectfully requests that the objection to claims 3 and 4 be withdrawn, and that claims 3 and 4 be allowed.

With this Amendment, Applicant has rewritten allowable claim 13 in independent form to include all of the limitations of the base claim (claim 11) and any intervening claims (claim 12). As rewritten claim 13 is now believed to be in allowable form, Applicant respectfully submits that dependent claim 14 is allowable in dependent form. Applicant, therefore, respectfully requests that the objection to claims 13 and 14 be withdrawn, and that claims 13 and 14 be allowed.

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CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-26 are all in a condition for allowance and requests reconsideration of the application and allowance of all pending claims.

Any inquiry regarding this Amendment and Response should be directed to either James R. McDaniel at Telephone No. (858) 655-4157, Facsimile No. (858) 655-5859 or Scott A. Lund at Telephone No. (612) 573-2006, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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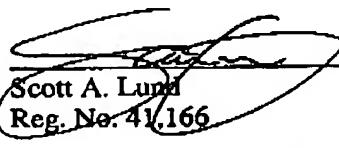
Respectfully submitted,

John M. Wade,

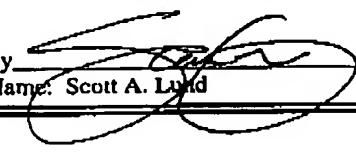
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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being facsimile transmitted to the United States Patent and Trademark Office, Fax No. (571) 273-8300 on this 15th day of August, 2006.

By 
Name: Scott A. Lund